

**Title** *Prepn. of polymeric iron sulphate - by oxidising acidic aq. soln. of ferrous sulphate at ambient pressure in absence of oxidn..*

**Patent Data**

**Patent Family**

WO9523765 A1 19950908 DW1995-41 C01G-049/14 Eng 22p \* AP: 1995WO-GB00483 19950306 DSNW: AM AU BB BG BR BY CA CN CZ GB GE HU JP KG KP KR KZ LK LT LV MD MG MN NO NZ PL RO RU SI SK TJ TT UA US UZ VN DSRW: AT BE CH DE DK ES FR GB GR IE IT KE LU MC MW NL OA PT SD SE SZ UG

AU9518541 A 19950918 DW1995-51 C01G-049/14 FD: Based on WO9523765 AP: 1995AU-0018541 19950306

EP-749402 A1 19961227 DW1997-05 C01G-049/14 Eng FD: Based on WO9523765 AP: 1995EP-0910624 19950306; 1995WO-GB00483 19950306 DSR: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE

US5785862 A 19980728 DW1998-37 C01G-049/14 FD: Based on WO9523765 AP: 1995WO-GB00483 19950306; 1996US-0700534 19960918

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**Cited patents** AU-464517; US2905533

**Abstract**

**Basic Abstract**

WO9523765 A Prepn. of a polymeric form of  $\text{Fe}_2(\text{SO}_4)_3$  comprises oxidising an acidic aq. soln. of ferrous sulphate to form  $\text{Fe}_2(\text{SO}_4)_3$  in the soln. at ambient pressure and in the absence of oxidn. catalyst. The  $\text{Fe}_2(\text{SO}_4)_3$  is at least partially hydrolysed by the addn. to the soln. of at least one base and the  $\text{Fe}_2(\text{SO}_4)_3$  is kept in contact with the base at a temp. for sufficient time for polymerisation of at least partially hydrolysed  $\text{Fe}_2(\text{SO}_4)_3$ .

Also claimed is a method of treating water using the sulphate.

he pH of the aq. soln. prior to oxidn. is  $< 2$  (esp. 0.8-1.5). The oxidn. is a one step oxidn. stage, and the oxidn. temp. is  $< 110^\circ\text{C}$  (pref. 15-50) $^\circ\text{C}$ . The oxidn. time is up to 3 (pref. 1) hr. The oxidn. step concn. of  $\text{Fe}^{2+}$  ions in soln. is  $< 2.5$  (pref. 0.25)%  $\text{Fe}^{2+}/\text{Fe}^{3+}$ .

During the hydrolysis step,  $\text{Fe}(\text{III})$  hydrolysis species of formula (A) and polynuclear complexes of  $\text{Fe}(\text{III})$  of formula (B) form as the polymeric form of  $\text{Fe}_2(\text{SO}_4)_3$ . The hydrolysis stage is carried out immediately after the oxidn. stage without removing or otherwise purifying the  $\text{Fe}_2(\text{SO}_4)_3$  formed.

The oxidising agent comprises ozone,  $\text{HNO}_3$ , peroxide, perchlorate and/or persulphate (esp.  $\text{HNO}_3$  and/or  $\text{H}_2\text{O}_2$ ). The aq. soln. comprises  $\text{FeSO}_4$  and  $\text{H}_2\text{SO}_4$ . The base comprises an hydroxide or a bicarbonate of an alkali metal.

USE - The polymeric  $\text{Fe}_2(\text{SO}_4)_3$  is useful as a coagulant or flocculant and for purifying and/or decolourising water and reducing pollutants in industrial and/or municipal wastewaters.

ADVANTAGE - The polymeric  $\text{Fe}_2(\text{SO}_4)_3$  (PFS) is obtd. by a more economical process and confers better performance. (Dwg.0/0)

**Patentee, Inventor**

**Patent assignee** (UNLO) IMPERIAL COLLEGE SCI TECHNOLOGY & MED

**Inventor(s)** GRAHAM NJD; JIANG J

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